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CHANGES IN THE LIPID CONTENT OF THE BLOOD  
IN PATIENTS WITH HYPERTENSION UNDER  
RESERPINE THERAPY

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CHANGES IN THE LIPID CONTENT OF THE BLOOD IN  
PATIENTS WITH HYPERTENSION UNDER RESERPINE  
THERAPY

[Following is the translation of an article by A. A. Kramer entitled "Izmeneniya Soderzhaniya Lipidov Krovi u Bol'nykh Gipertonicheskoy Bolezn'yu pri Lechenii Reserpinom" (English version above) in Klinicheskaya Meditsina (Clinical Medicine), Vol. XII, No. 6, Moscow, 1960, pages 104-107.]

The Institute of Therapy of the Academy of Medical Sciences USSR (Director - active member of the Academy of Medical Sciences USSR, Prof. A. L. Myasnikov)

We carried out determinations of the content of total cholesterol (Bloor method) and of phospholipides (sulfite-hydroquinone method) and clarified their relationships in the blood of patients with hypertension prior to, during and following treatment with reserpine. The course of treatment varied from 20 days to a month. Altogether we studied 80 hypertensive patients; in 32 it was combined with atherosclerosis. Changes in the blood lipids and their relationships within  $\pm$  ten percent of the original values were regarded as variations within physiological limits and were not attributed to the influence of reserpine.

Of the 80 patients taking reserpine, in 45 the variations in the cholesterol level did not exceed physiological limits; in 27 patients the cholesterol content was reduced (by 20 to 30 percent in half of them), and in only eight patients was there an increase. In the majority of patients (51 out of 80), the content of phospholipids in the blood during reserpine treatment showed no change; in 23 the level of phospholipids increased (in 15 of them it increased by 20 to 50 percent or more), and only in six patients did it decline. In 41 of the 80 patients the

phospholipid/cholesterol coefficient increased (in 28 patients it increased by 20 to 50 percent and more), in 31 it did not change, and only in eight did it increase.

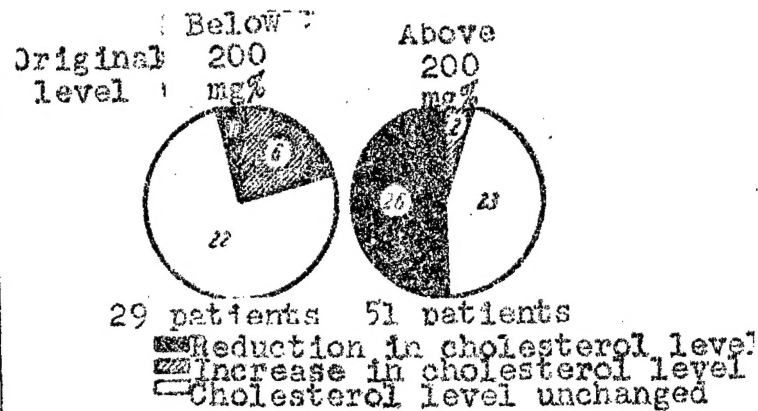


Fig. 1. Changes in the cholesterol content in the blood depending upon its original level with reserpine treatment.

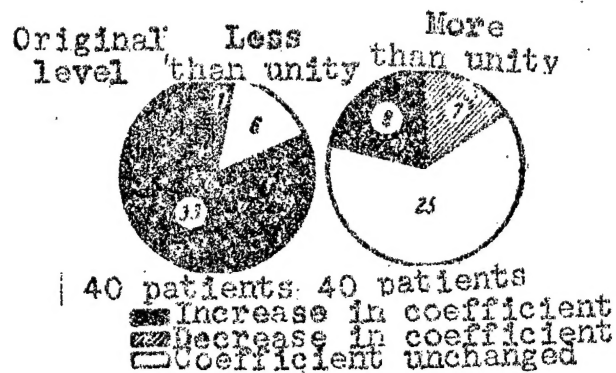


Fig. 2. Changes in the phospholipid/cholesterol coefficient depending upon its original level with reserpine treatment.

The changes in the cholesterol content of the blood in patients taking reserpine depend to a considerable extent on its original level (Fig. 1). With an original level below 200 mg percent, a subsequent reduction was seen only in one of 29 patients, whereas in 22 patients the level did not change and in six it actually increased. With a high cholesterol level in the blood to begin with (above 200 mg percent), reduction was seen in 26 patients out of 51; in 23 the content remained unchanged and only in two did it increase. Hence, reduction in the blood cholesterol level under the influence of reserpine usually occurs in persons with high original levels.

Changes in the content of the phospholipids of the blood and of the phospholipid/cholesterol coefficient (Fig. 2) also depend upon their original level; the lower the original level, the more often there is an increase with reserpine treatment.

With a low original level of the phospholipid/cholesterol coefficient (less than unity), increase of it was observed in 33 of 40 patients, and reduction in only one patient. With a high original value, however (greater than unity), further increase was seen only in eight of 40 patients; in 25 patients the value did not change and in seven it decreased.

In analyzing our data we did not detect any differences in the changes of the blood lipids under the influence of reserpine in patients with hypertension alone and in patients with hypertension associated with atherosclerosis.

The above data concerning the changes in the blood lipids of patients being treated with reserpine may be regarded as favorable from the point of view of modern ideas concerning the pathogenesis of the atherosclerotic process. What is the mechanism of this favorable effect of reserpine in atherosclerosis?

It is known that the hypotensive effect of reserpine is due to reduced stimulability of the sympathetic nervous system at the level of the subcordical ganglia (Bein, 1953; Wilkins, 1954, and others). It has been established that there is a favorable effect of reserpine on cortical processes also. In the opinion of many authors, reserpine exerts a marked sedative effect. T. N. Ivanni-

kova (1958) also showed that it alters the electrical activity of the cerebral cortex in the direction of normalization.

The positive changes in the blood lipids occurring under the influence of reserpine may be due to its centrogenic action, since it is known that the central nervous system plays a leading role in the regulation of lipid metabolism in atherosclerosis (A. L. Myasnikov).

There is evidence of an influence of several neurotropic substances on the lipid content of the blood in atherosclerosis both in the clinical form (T. D. Tsibekmakh, 1953; L. A. Myasnikov, 1956) and in experimental atherosclerosis in rabbits (Yu. T. Pushkar', 1953; I. K. Shkhvatsabaya, 1956). At the same time, in hypertension it is possible to observe changes in the composition of the blood lipids characteristic of atherosclerosis. Also, in hypertensive crises, at the basis of which lies a central system disorder, there are shifts in the blood lipid content (K. A. Ratner, Ye. A. Denisova and N. A. Smazhnova, 1958).

The favorable effect of reserpine - a preparation possessing a marked hypotensive effect - on the composition of the blood lipids may be evidence of the pathogenic unity of hypertension and atherosclerosis. The favorable changes in the lipid composition of the blood frequently seen in reserpine treatment, yet again confirm the importance of reserpine as the substance of choice in the treatment of patients with hypertension, frequently complicated by atherosclerosis.

#### Conclusions

(1) In treating hypertensive patients with reserpine, a third of the patients exhibited a reduction in the cholesterol content of the blood, increase in the content of phospholipids, and, in half of the patients, an increase in the phospholipid/cholesterol coefficient.

(2) Changes in the blood lipids under the influence of reserpine are directly dependent upon the original level of them. Thus, a reduction in the blood cholesterol content usually occurs in patients in whom the original level of it was high, and increases in the phospholipid

content and in the phospholipid/cholesterol coefficient occur most frequently with a low original value.

(3) Under the influence of reserpine, the content of lipids in the blood usually changes in a favorable direction (from the point of view of contemporary ideas concerning the pathogenesis of the atherosclerotic process).

(4) Changes in the blood lipids under the influence of reserpine may be related to the centrogenic action of this preparation.

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